Safety & PPE Notes

- •Always have your vest on and alloy toe boots on.
- •Always wear safety hat while on the production floor.
- •Always wear your safety glasses when performing any operation or when close to the production area.
- •Do not hold or handle copper with bare hands.
- •Always watch out for the forklift and do not stand in its way.
- •Make sure to always use a ladder while performing operations at a certain height.
- •Take preventive measure while heavy/handling/lifting equipment.
- •If at any time you feel it is not safe to perform/involve in a particular task, contact supervisor immediately.

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IR/HIPOT

INSULATION RESISTANCE AND DIELECT RIC TESTING

Main title: Pre-Power Testing (Part 6)

Subtitle: Insulation Strength and Dielectric Strength Tests

General objective: Ensure electrical safety and compliance of insulated conductors (PDC, UL and IEC variants)

Pre-Energisation Test

Insulation Resistance and Dielectric Testing Requirements

Insulation Stress Test (Megger)

Title: 6.1 Insulation Test Requirements

Purpose: Check the insulation of the conductors (L1, L2, L3) from each other and from the ground.

Exceptions: Not required for auxiliary circuits protected by a ≤ 16A (IEC 61439-1) short circuit.

Success Criterion (IEC 61439-1): Minimum 1,000 Ω/V per

Test Parameters:
Tension : 1 000 V d.c.
Duration: 1 second

- **Test Parameter Summary (Table)**
- **Title:** Test Summary Table

Type de Test	Applied Voltage	Duration	Target Value / Standard
Isolement (Megger)	1,000 V DC	1 s	≥ 1 MΩ
Dielectric (IEC)	1,890 V AC	60 s	IEC 61439 compliance
Dielectric (UL)	1,960 V AC	60 s	UL Compliance

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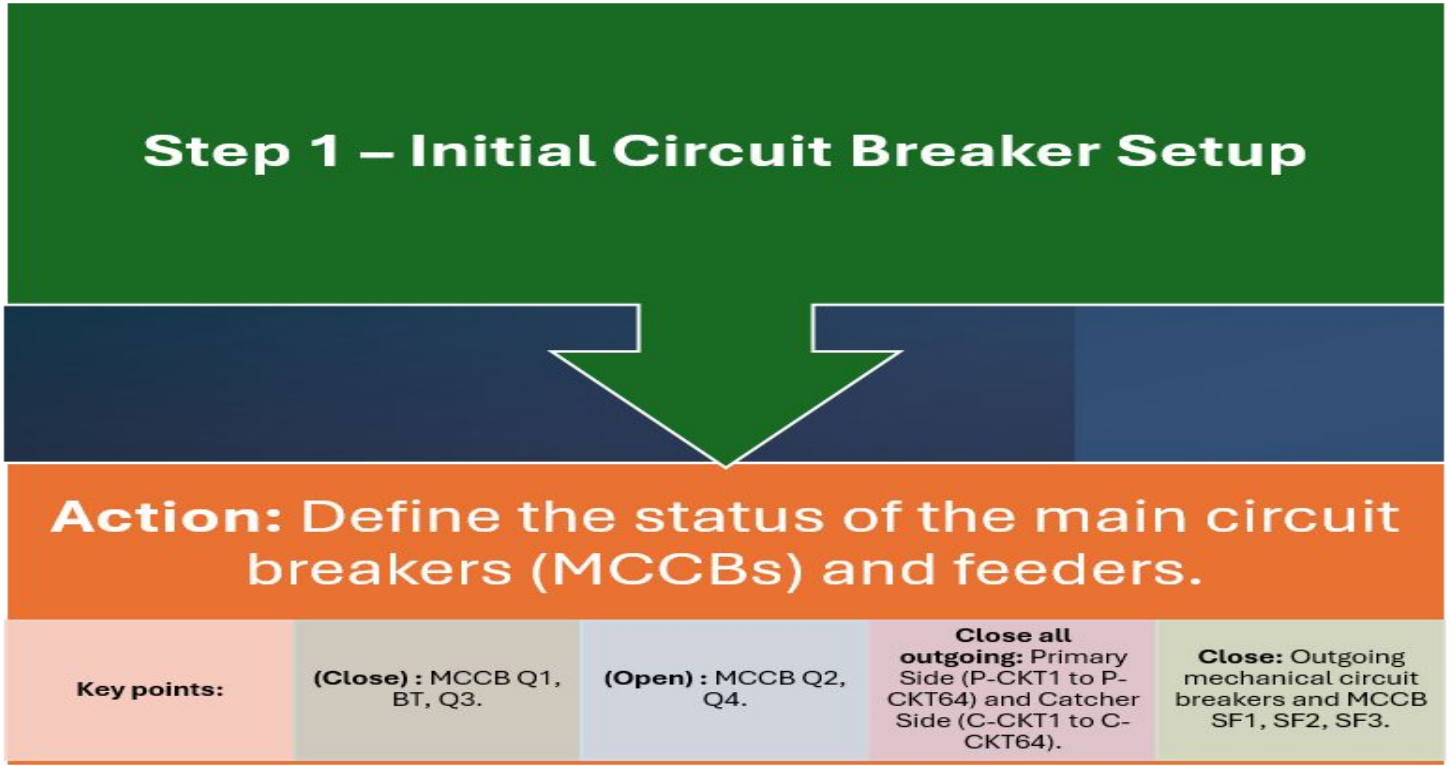
Step 1 – Initial Circuit Breaker Setup
Action: Define the status of the main circuit breakers (MCCBs) and feeders.
Key points:
(Close) : MCCB Q1, BT, Q3.
(Open) : MCCB Q2, Q4.
Close all outgoing: Primary Side (P-CKT1 to P-CKT64) and Catcher Side (C-CKT1 to C-CKT64).
Close: Outgoing mechanical circuit breakers and MCCB SF1, SF2, SF3.

Open : MCCB Q2 & Q4.

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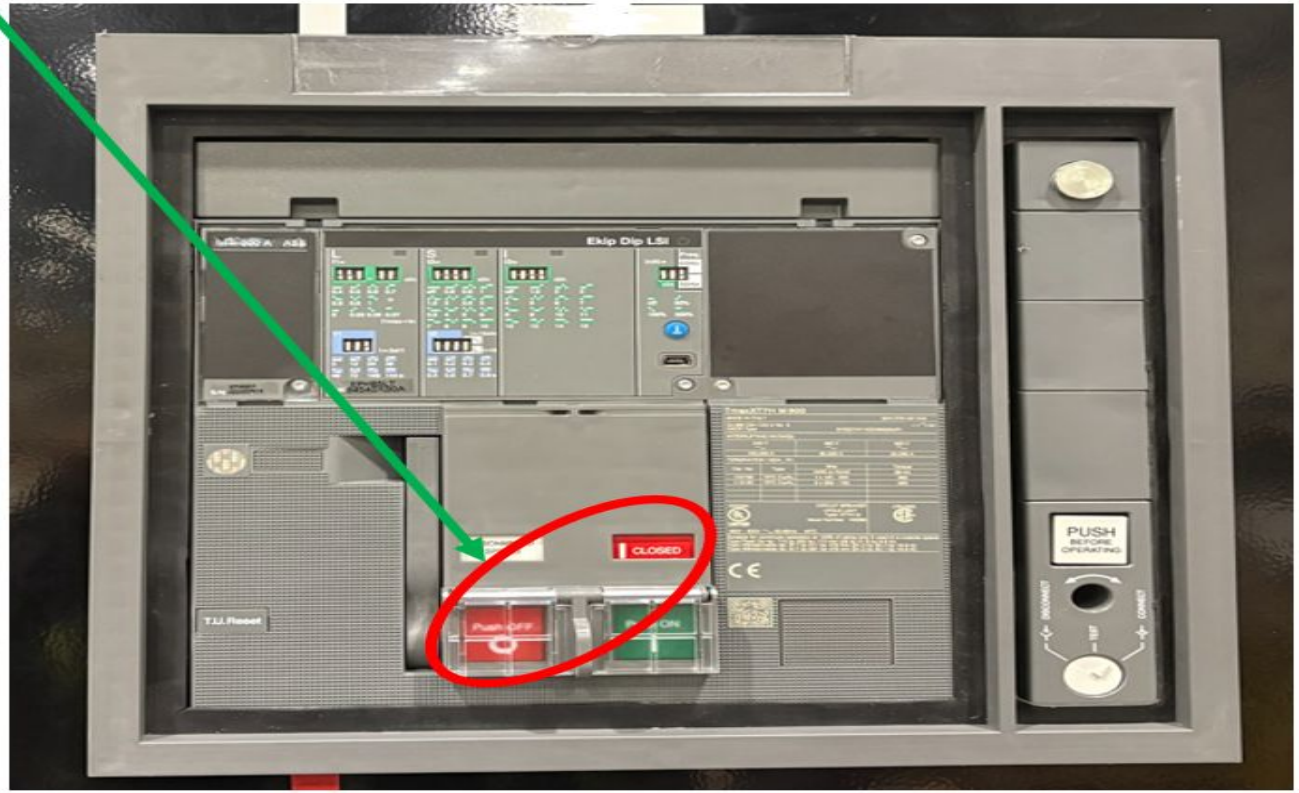
Close : MCCB Q1, BT, Q3.



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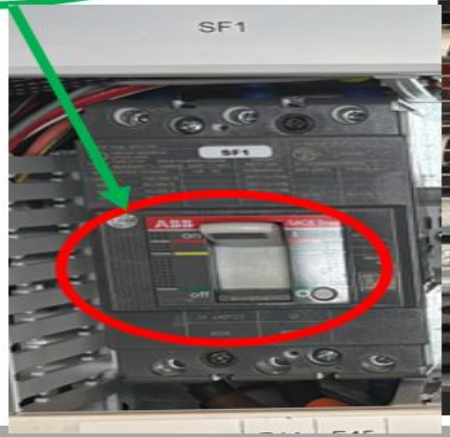
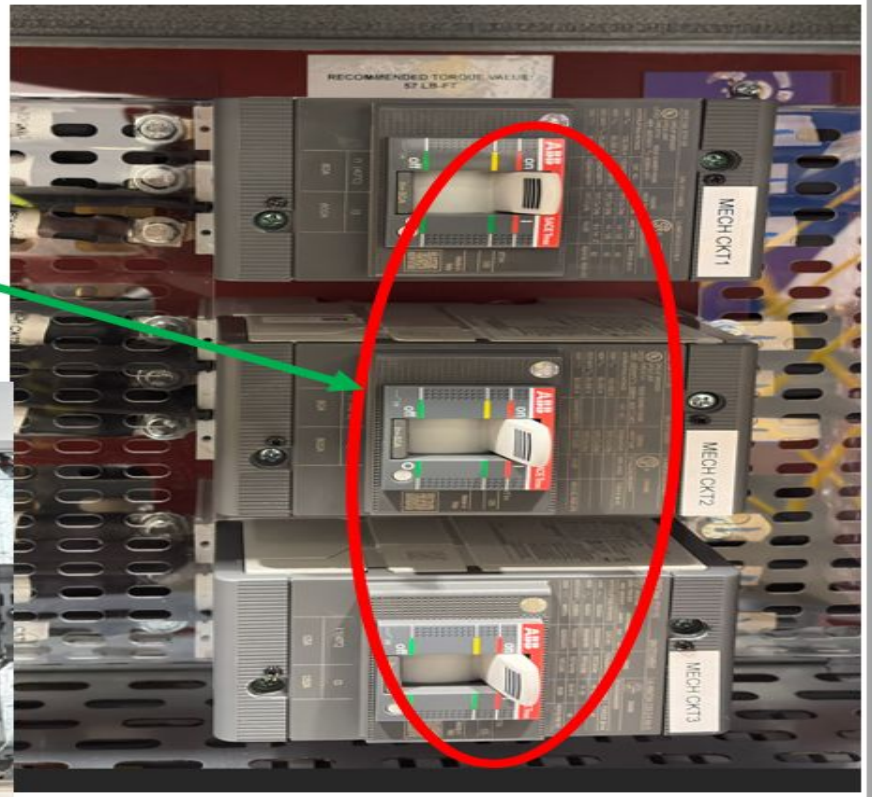
Close :Outgoing mechanical circuit breakers and MCCB SF1, SF2, SF3.





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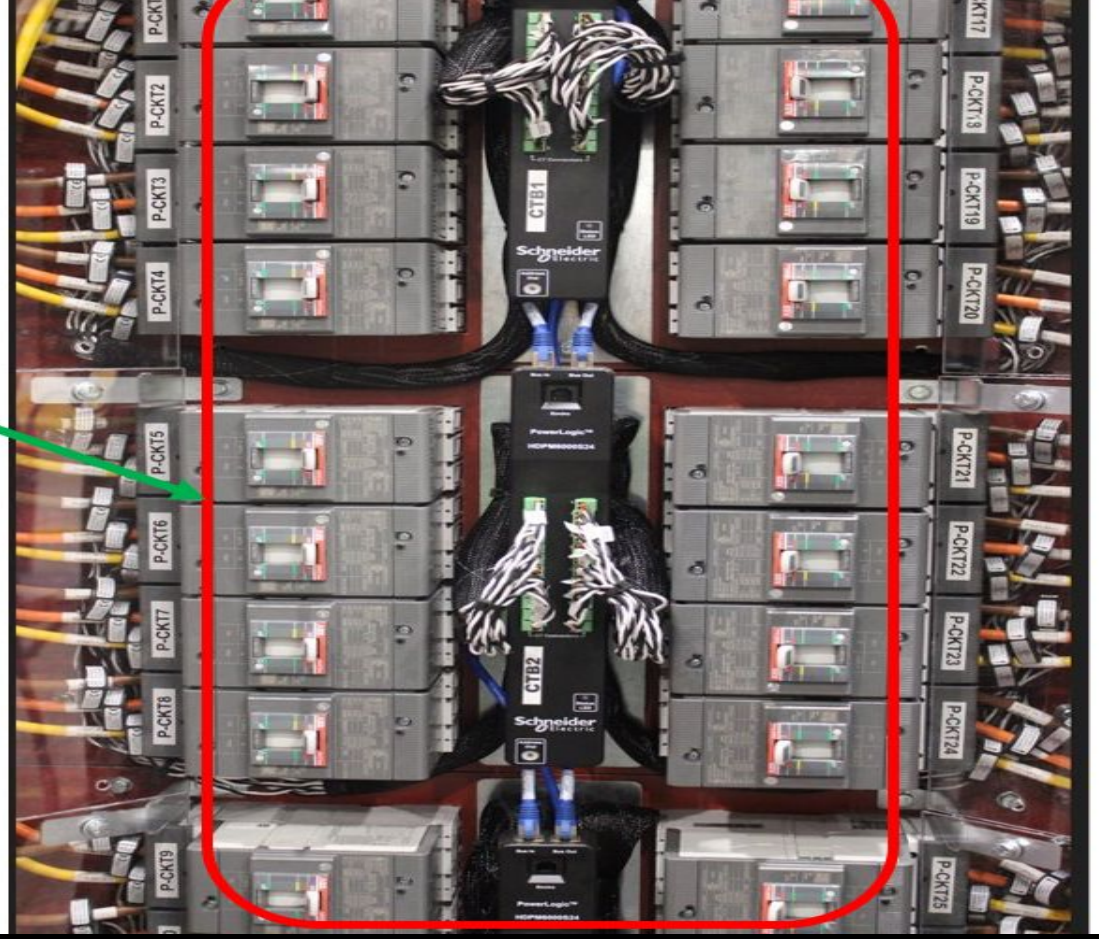
Close all Primary and Catcher side outgoing MCCBs (1-64).



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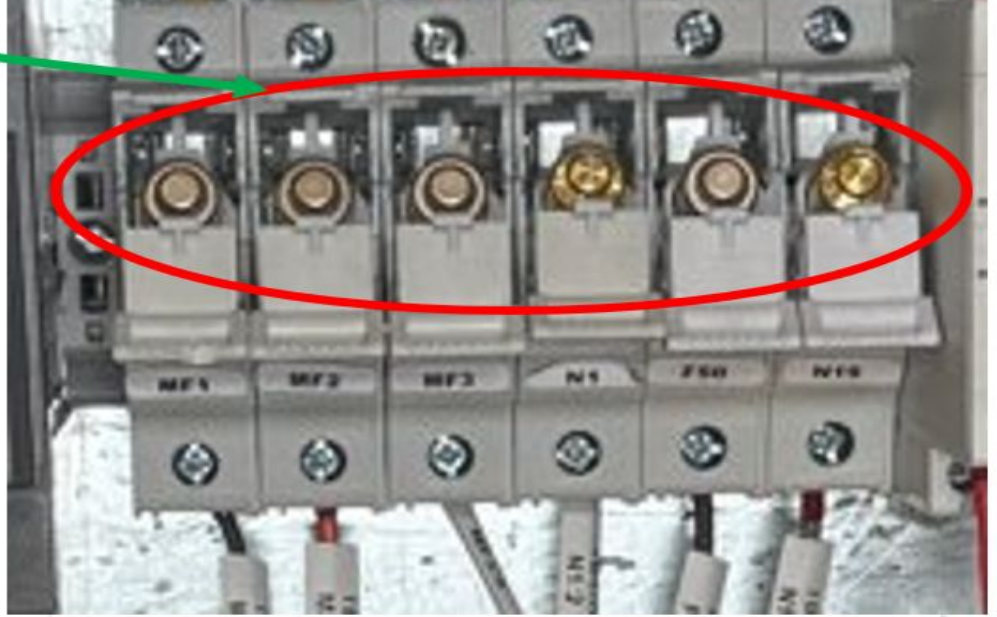
Step 2 – Isolating Sensitive Components

Action: Protect electronics from high test voltages.

Key points:	**Open:** All fuse holders in the control sections (Primary & Catcher).	Remove: The cartridges from the surge protection devices (SPD-Q1, SPD-Q2/Q3, SPD-Q4

Open: All fuse holders in the control sections (Primary & Catcher)



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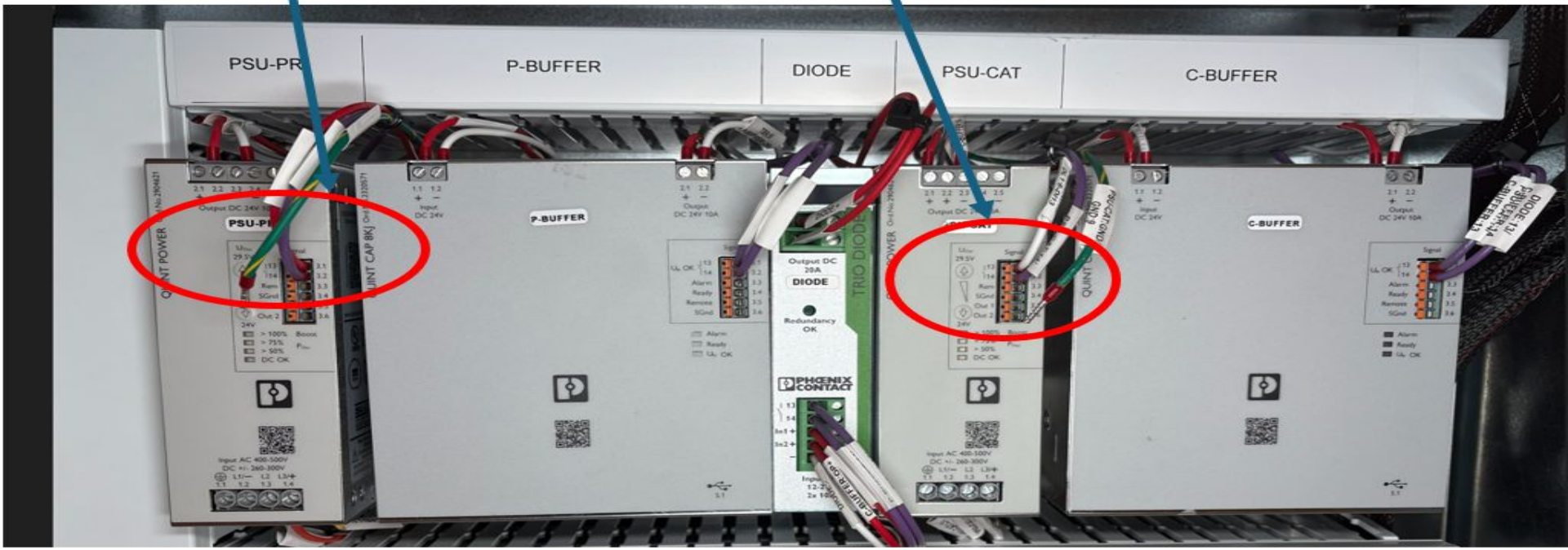
Disconnect: Control Earth cables for 24VDCpower supplies



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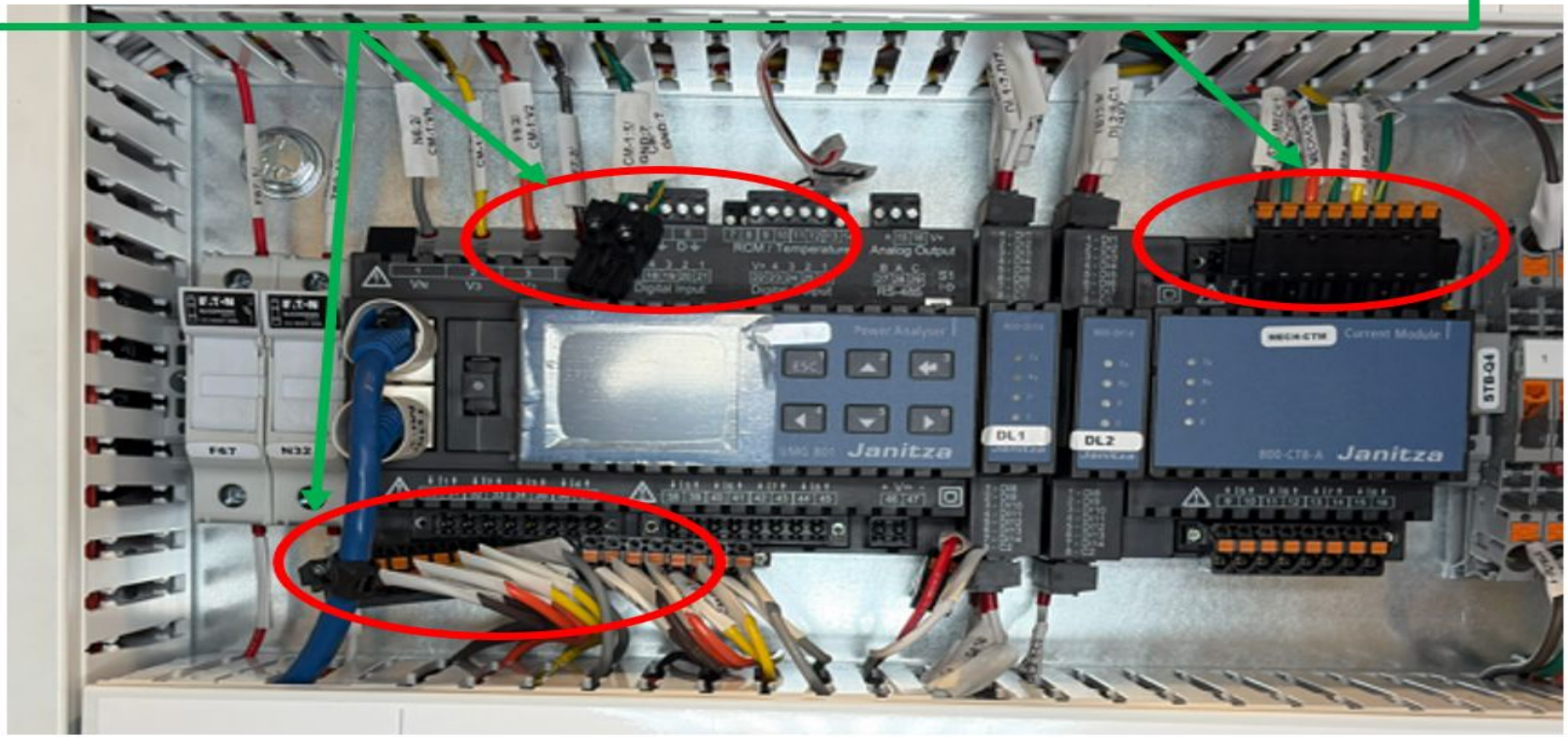
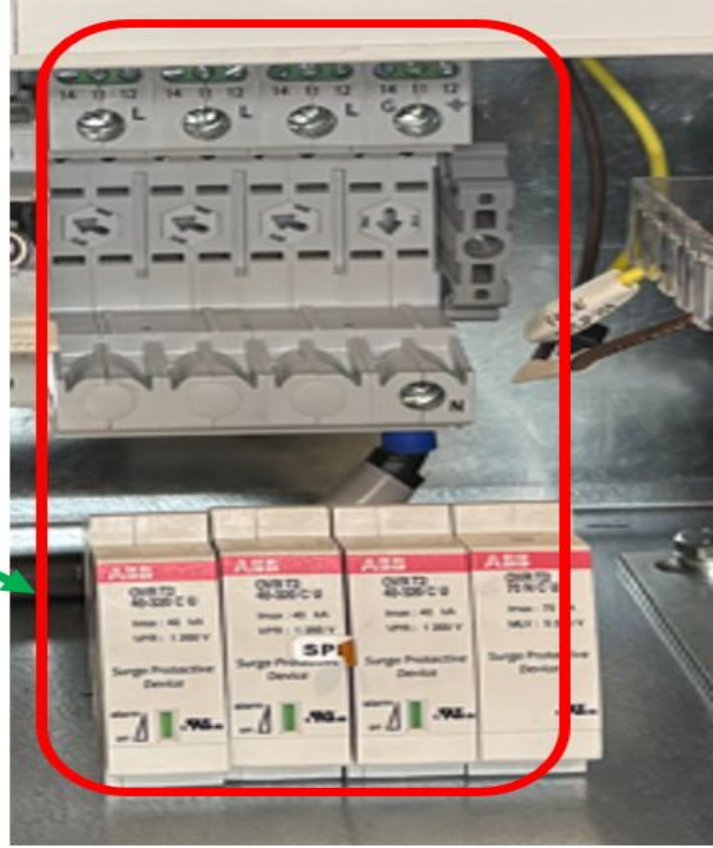
Disconnect: Ethernet switch (ETH S/W).



remove SPD cartridges (SPD-Q1 to Q4).



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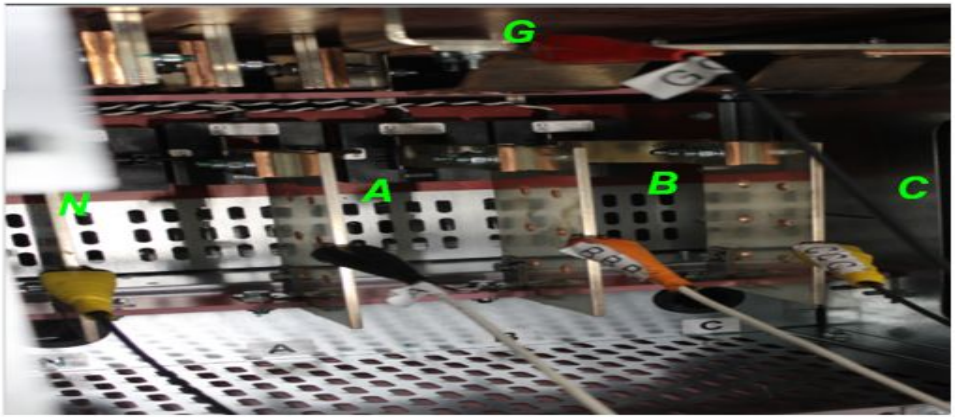
Step 3 – Testing on the Arrival Side Q1 (Incomer)



Action: First series of electrical measurements.

Key points:

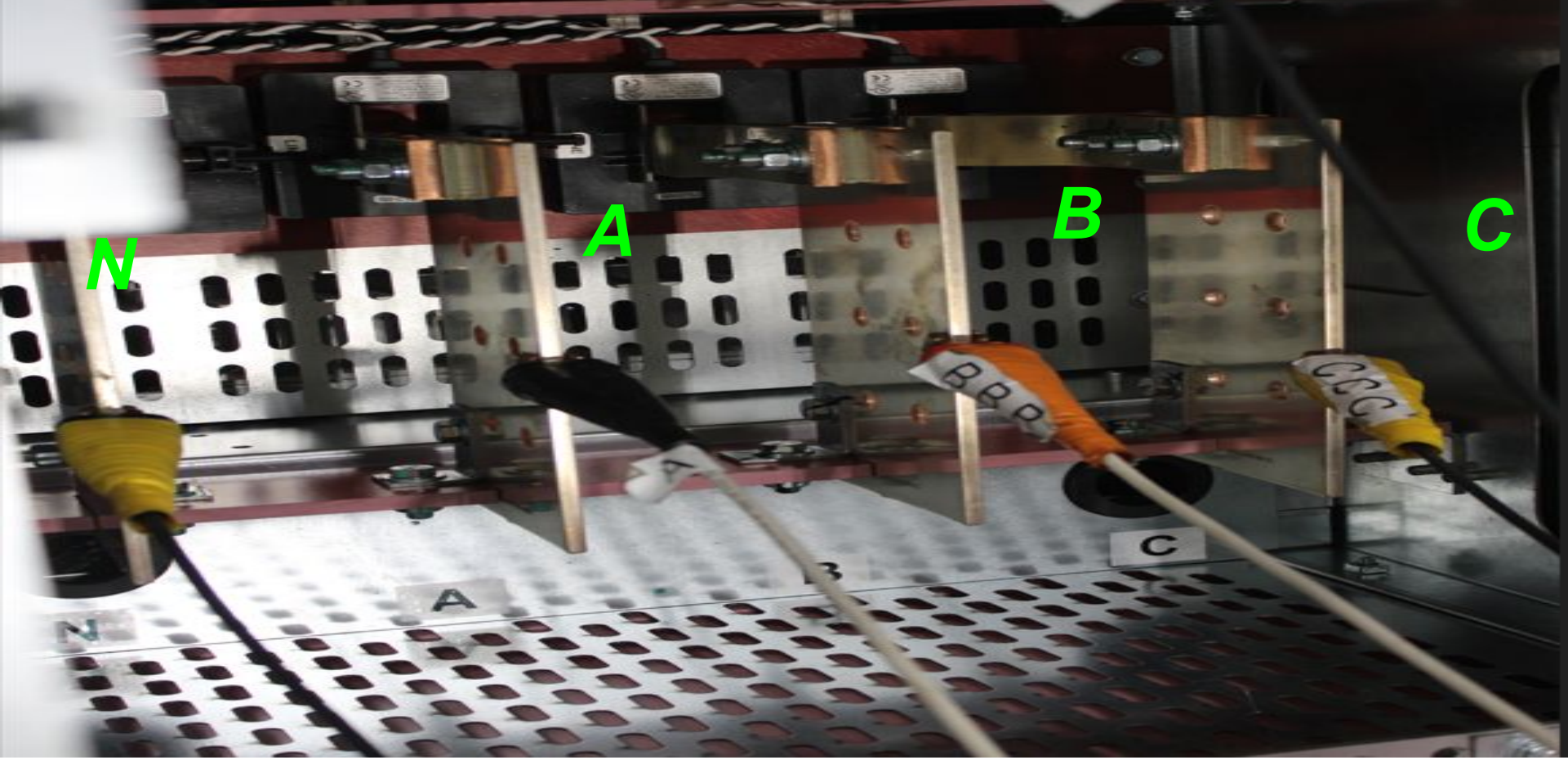
Insulation Test (IR Test): At 1000VDC between all phases, neutral and ground ➡ *Save in Table 6.3.1.*

Dielectric Strength Test: Between phases, neutral and ground on the arrival Q1.

IEC standard: **1.89 kV** for 60 seconds.

UL Standard: **1.96 kV** for 60 seconds.

Second Isolation Test (IR Test): At 1000VDC to check for degradation after dielectric ➡ test *Record in Table 6.3.1.*



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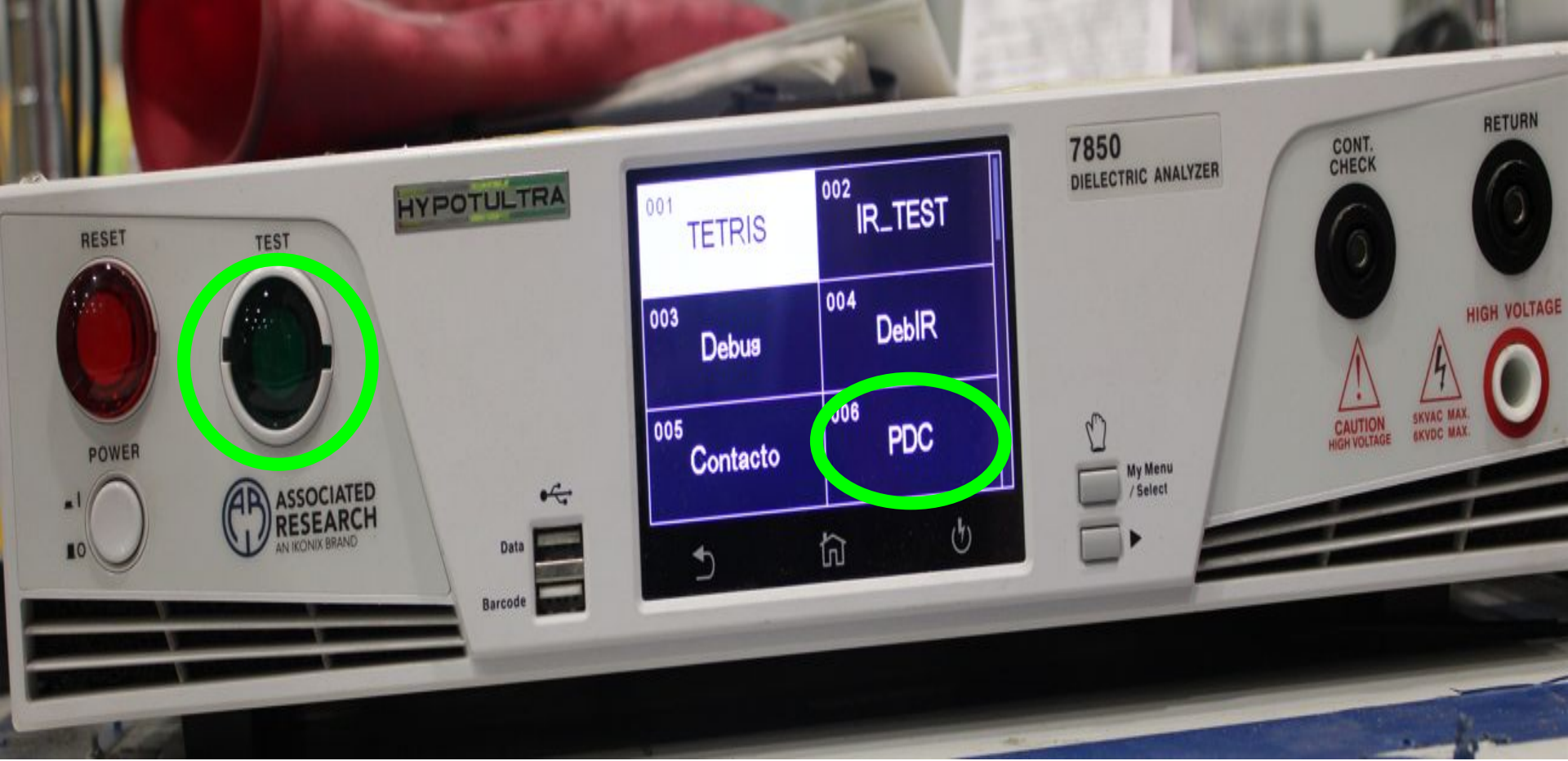

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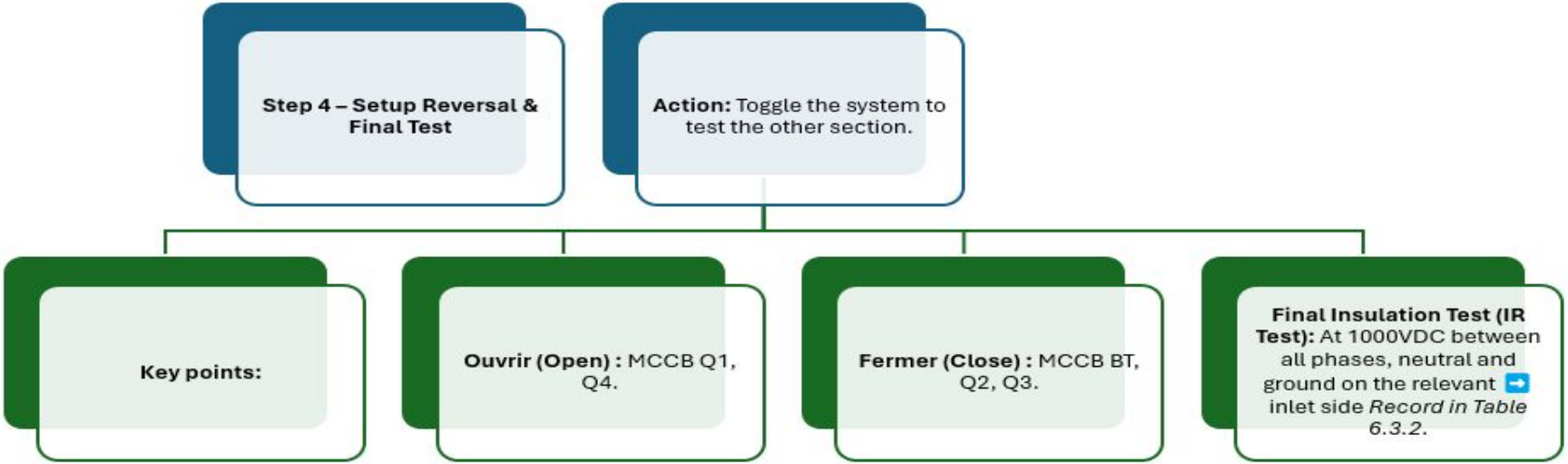

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